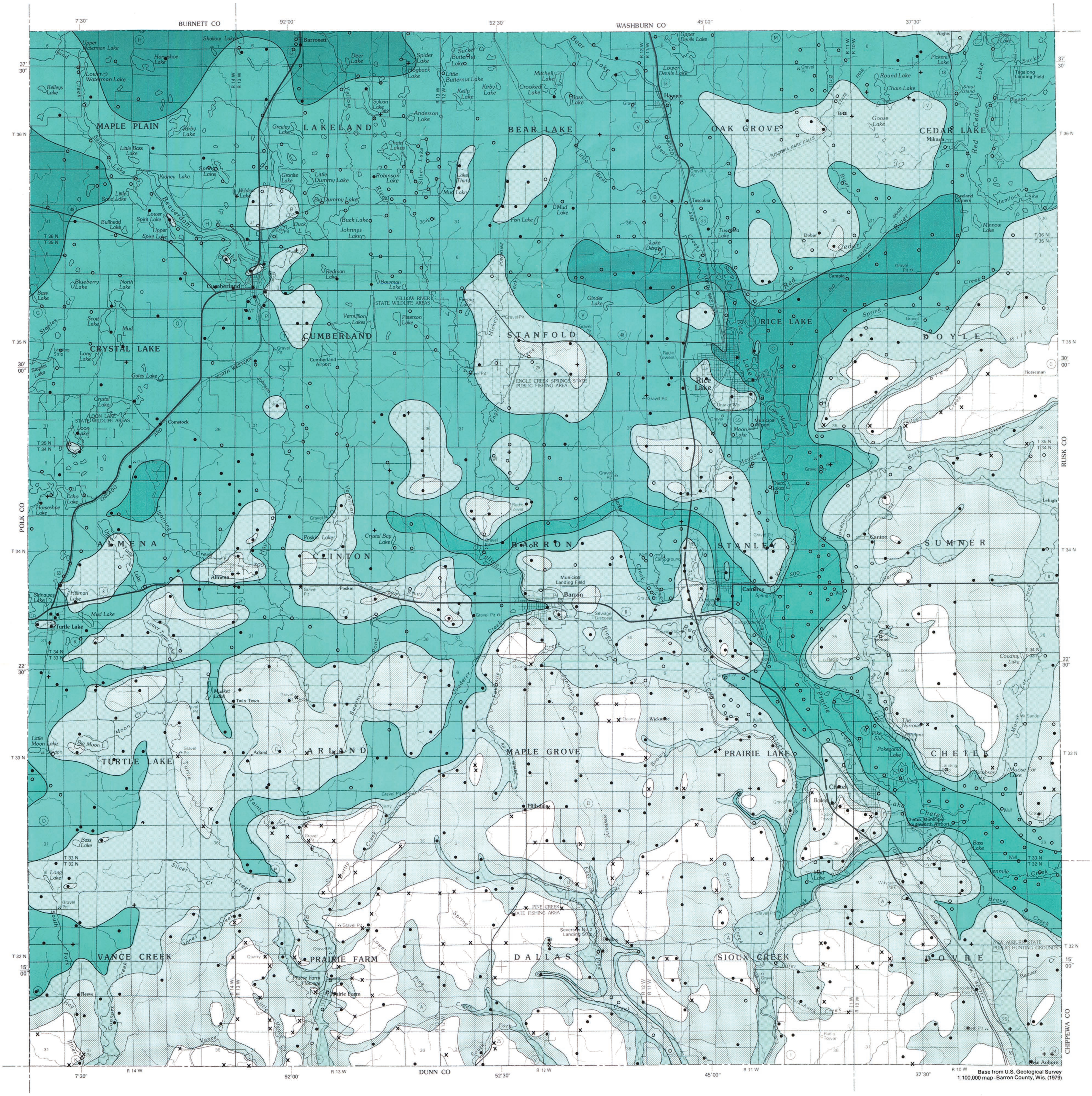
DEPTH TO BEDROCK IN BARRON COUNTY, WISCONSIN



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Most deposits above bedrock in Barron County are the direct or indirect result of glaciation. During the period of geologic time called the Pleistocene, glaciers advanced into the county at least seven times. The oldest glacial event probably occurred several hundred thousand years ago and the last one around 15,000 years ago. These advances and associated deposits were described by Johnson (in press), who mapped Pleistocene deposits in Barron County during 1981 and 1982. Glacial environments are varied and complex, and deposits that formed under and around glaciers have a wide range of characteristics. The different environments are important in determining the size of grains deposited, soil types that have formed on these deposits, and consequently, land-use suitability of the deposits.

Glaciers leave behind unconsolidated (not lithified) deposits of variable thickness and character. During the erosion and transportation process, glaciers mix materials of different sizes, producing sediment that is poorly sorted. This sediment, called till, is composed of an unstratified (not layered) mixture of clay, silt, sand, and gravel. Water produced by melting ice moves large amounts of material away from glaciers. Sediments deposited by meltwater streams on plains beyond the glacier consist of moderately well sorted and stratified sand and gravel. Sediment deposited on flood plains of modern rivers is similar in character to meltwater-stream deposits. Typically in Barron County gently rolling, till-covered uplands are interspersed with broad outwash plains underlain by sand and gravel.

After the last glacial period, deposition continued by wind and by action of modern rivers. After or toward the end of the last glacial advance, loess (windblown silt) covered Pleistocene deposits. In the southern part of the county, loess was deposited directly on Cambrian sandstone. Loess is the parent material of many soils. Its thickness ranges from 0.5 to 2 ft in most of the county; a maximum depth of about 4 ft occurs in central Barron County. Because its permeability generally is low, the loess limits the rate of downward percolation of water to aquifers within the county.

The unconsolidated deposits overlying bedrock in Barron County vary greatly in thickness even within short distances because of the uneven erosional relief of the rock surface. The deposits are thickest (more than 300 ft) in preglacial rock valleys. They are thin or absent in the south and in the Blue Hills area east of Rice Lake. Generally, unconsolidated deposits in the county thicken from the southeast to the northwest (see map).

In many parts of southern Barron County, Cambrian sandstone or sand is less than 5 ft below the land surface. Areas where the rock is exposed at the surface are abundant; if covered, it is usually only by a thin layer of loess. In east-central Barron County, Precambrian quartzite is also very close to the surface, covered only by a few feet of till. In the southern and southeastern parts, unconsolidated deposits occur primarily in postglacial or preglacial valleys. Their thickness does not exceed 150 ft, except in the buried rock valley extending from Rice Lake south under Rice Creek, Prairie Lake, Lake Chetek, and Tenmile Creek, where the depth to bedrock is more than 200 ft. The greatest thickness of unconsolidated deposits reached by a well was more than 302 ft in a well that did not reach bedrock, located near Barronett at the northern edge of the county. The thickness of till in central Barron county is between 50 and 150 ft. In the northwest, the bedrock surface is between 150 and 250 ft below the land surface (see map).

Thickness of unconsolidated material:

- <5 ft
- 5—50 ft
- 50—100 ft
- 100—200 ft
- >200 ft
- Contour line

SCALE 1:100 000

KILOMETRES: 1 0 1 2 3 4 5

MILES: 1 0 1 2

- x Outcrop
- + Mapping drill hole
- o Well not reaching bedrock
- • Well reaching bedrock
- +302 Greatest thickness encountered in a well (in feet)

REFERENCE

Johnson, M.D., in press, Pleistocene geology of Barron County, Wisconsin: Wisconsin Geological and Natural History Survey Information Circular 55.

UWEX University of Wisconsin—Extension

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Map 87-2d A part of the Barron County Atlas